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The problem of practical eugenics

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The Problem of Practical Eugenics

BY

KARL PEARSON, F.R.S.

The Darwinian revelation shows that humanity can no longer be considered static. We know it to be kinetic, the races of which it is composed being in a perpetual state of change. The judgment of history on the sagacity and achievements of statesmen will turn henceforth on the measure of their contributions to the racial progress of their nations in the generations which succeed them.

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UNIVERSITY OF LONDON

THE FRANCIS GALTON EUGENICS LABORATORY,
UNIVERSITY COLLEGE, GOWER STREET, W.C.

This Laboratory was founded by Sir Francis Galton, and is under the direction of Professor Karl Pearson, F.R.S.

Galton Research Fellow: David Heron, M.A., D.Sc. Galton Research Scholar: Ethel M. Elderton. Computer: Amy Barrington. Assistant for Pedigree Drafting: Kathleen T. Ryley. Hon. Sec.: H. Gertrude Jones.

National Eugenics is the study of agencies under social control, that may improve or impair the racial qualities of future generations, either physically or mentally.

It was the intention of the Founder, that the Laboratory shall serve (i) as a storehouse of statistical material bearing on the mental and physical conditions in man, and the relation of these conditions to inheritance and environment; (ii) as a centre for the publication or other form of distribution of information concerning National Eugenics; (iii) as a school for training and assisting research-workers in the special problems of Eugenics.

Short courses are provided for those who are engaged in social, medical, or anthropometric work.

THE BIOMETRIC LABORATORY

This Laboratory, assisted by a grant from the Worshipful Company of Drapers is designed to assist the statistical study of Biological Problems.

Assistants: Julia Bell, M.A.; Herbert G. Soper, M.A.; Eveline Y. Thomson. Barrington Student in Craniometry, vacant.

Until the phenomena of any branch of knowledge have been subjected to measurement and number, it cannot assume the status and dignity of a Science.—Francis Galton.

The Laboratory provides a complete training in modern statistical methods, and the staff assists research-workers engaged on biometric problems.

PREFATORY NOTE

THIS paper gives the substance of the final lecture of a Course on the Science of National Eugenics delivered at the Galton Laboratory on May 25, 1909. It is published because the Staff of that Laboratory has found the need of some introduction to the science of Eugenics, which shall place the results of their investigations in a simple form before the layman. The aim of the present series of publications is to state the conclusions drawn from laborious statistical investigations and their bearing on national welfare in non-technical language suited to the general reader.

THE PROBLEM OF PRACTICAL EUGENICS

I SHALL endeavour to-day to bring together the various facts which have been placed before you in this course of lectures. I may have to supplement them by a few others which have been pressed out in the rapid survey we have had to make of this wide field. On the basis of the whole course I shall try to indicate what appears to me the pivot for all practical eugenic action. In the first lecture I laid stress on the great importance of Natural Selection—the selective deathrate—as tending to human efficiency. I pointed out to you that various factors of our modern life were suspending its action, and that our chief hope for national efficiency in the future must lie in a selective birthrate. The whole trend of legislation and social action has been to disregard parentage and to emphasise environment. Before we could express an opinion on this trend, we had to get some idea of the relative importance of heredity and of environment in producing desirable characteristics in the general population. In the case of man there is only one method of approaching the problem of inheritance, which, it seems to me, at present can have any application to the treatment of mankind in the mass, or any bearing on great social reforms. You cannot study the latent

gametic properties of the individual by ascertaining the qualities of his offspring under varying circumstances, as in the breeding pen. You must record, by the method of averaging large numbers, the patent somatic characters of ancestry, and find their direct correlation with the somatic characters of the offspring; you must deal with the average of large numbers, and then you will understand how human populations, as a whole, change. When we apply this method to various characters in man, we find that the degree of resemblance between parent and offspring lies between ·4 and ·5; between offspring and grandparent between ·2 and ·3; and between any grade of ancestor and the offspring the resemblance diminishes in geometrical progression, the factor of reduction lying between ·5 and ·6. This law is confirmed by the records of horses, dogs and cattle. On the average it is twice as profitable to have a remarkable parent as a remarkable grandparent, and so on,—the chance of noteworthiness on the offspring's part is double as great. This law, which has been termed in Biometry the law of ancestral heredity, has not been in the least upset by any work of the so-called Mendelian School; and were Mendelism the last word on heredity, it would follow from Mendelian theory itself. Indeed, were there any immediate prospect of applying Mendelism to man from the point of view of social reform, the first question to be answered would be this very one—what weight are we to give to the occurrence of this or that factor in the pedigree? We should ultimately be reduced to a statistical inquiry as to the distribution of somatic characters in the ancestry

and their influence on the characters of the offspring.

And again, when we consider these somatic characters, can they possibly be pressed into the alternative "unit characters" of the Mendelian? I do not for a moment believe it—it certainly is not possible in the case of the two characters I have myself studied at first hand, namely, human albinism and lobster-claw in man. Indeed, I would here repeat the words of Professor Bateson:

"To prevent disappointment, however, it must be at once admitted that for fanciers Mendelism can as yet do comparatively little...applied to the business of breeding winners in established breeds, they (Mendelian principles) cannot help, for almost always the points which tell are too fine to be dealt with in our analysis."

Replace fanciers by Eugenists, and these remarks apply exactly—the points which tell are too fine for Mendelian analysis. You cannot profitably group men into tall and short, into pure blue eyed and non-blue eyed, into albinos and all the rest. The finer grading and the statistical observation of how much quantitative differences in the parents or ancestry influence the grade of the offspring are essential to our judgment of hereditary influence in man.

The general results of the ancestral school show that a resemblance between any ancestor and the offspring does exist, that for parent and child there is a correlation of ·5, that is a value half way up the scale of relationship, and that this diminishes in

grandparents to about ·25 and so on. Now, how do these values compare with the environmental factors? The last lecture of this course threw some light on that matter. Good home environment was shown to have practically no influence on the intelligence of boys, on girls it was represented by a correlation of ·07, hardly $\frac{1}{7}$ the intensity of heredity. The relationship between eyesight and the home conditions was practically insensible, and the effects of employment of mother on the physique of the children, or of the drinking of the parents on the intelligence of the children were practically of no importance compared with the fundamental factor of heredity. We have recently determined the correlation between the short-sightedness of a child at a given age, and the age at which it began to learn to read, the correlation is ·04 and this negligible value is *in favour of beginning to read early!* Put this against the resemblance in myopia of parent and child, which is somewhere about ·5, and you realise at once how great is the importance of the hereditary as compared with the environmental factor!

Have not the numbers given in the past lectures taught us then a *first* fundamental principle of practical Eugenics? It is five to ten times as advantageous to improve the condition of the race through parentage as through change of environment.

I now come to the second fundamental principle of practical Eugenics. Legislation devoted to the improvement of the race by change of environment may not only be ineffectual, but may be positively detrimental, if its result be to modify selective action.

I must emphasise again the principle that it is essential for national fitness, that when we suspend the selective deathrate, we should see to it that a selective birthrate is introduced at the same time.

Now, if this second principle be true, it must admit of demonstration, and I propose to illustrate it as extensively as lies in my power at present from the chief English legislation with regard to environmental conditions. We pride ourselves as a nation on our factory legislation. We have limited the employment of women and children, and sought thereby to improve their conditions of life and health. Environment must be bettered; our legislators never once asked what will be the effect of the method of this betterment on parentage!

My attention was first drawn to this matter by the extraordinarily low birthrate in Bradford. On the average every married woman of child-bearing age has a child only once in about ten years, as against the rate of one in five years of 60 years ago. What is the source of this change? Medical friends in Bradford were quite definite on the point; it was due to the decreased economic value of the child, which had followed the extensive factory legislation with regard to its employment. Formerly a child became at an early age a pecuniary asset. It contributed to the family maintenance by six or eight years of age, and by the number of children the economic prosperity of the home was in a certain sense measured. That a child should be looked upon as a "pecuniary asset" shocks many of us, as it shocked Lord Shaftesbury. But from inquiries I have made, the condition of the child as a "pecuniary

asset" was not wholly a bad one; it must be kept in health, because it ceased to have a pecuniary value if it broke down. A Bradford doctor assured me that in the days before the factory acts more care was taken of the children on this very account. No Bradford woman of those days would have replied as to the number of her children: "Sixteen, but, thank the Lord, thirteen of them are in the churchyard." The effect of lead-poisoning and the professional abortionist were then practically unknown in the manufacturing centres.

The mistake of most legislation is that it is carried by appeal to the sentiment and feelings of relatively small classes—the cultured and highly sensitive upper and middle classes. The biological and economic bases of life are disregarded, and the result is only manifest twenty or thirty years later.

Let us look again at another phase of factory legislation. Besides limiting the employment of children in factories and shops, Parliament has placed restrictions on the employment of women when near child-birth. We picture the child and the mother toiling in the factory, and we, judging the matter from our own feelings and cultured sentiment, shudder and—attempt to turn them out. We never regard the matter from the economic standpoint, and do not realise that in our well meant action we have taken a great step towards the abolition of both children and motherhood.

The economic standpoint is so obvious that one cannot realise how it escaped the early factory act promoters. The factory legislation swept away step by step every possibility of a child being a pecuniary

asset until it had reached the age, when it would in a few years want to spend its own earnings in its own way. The factory acts in no manner assisted the rearing of those children, who were forbidden to make their parents any pecuniary return for 13 to 15 years. The father was handicapped in the struggle for existence as against the childless man. In the same manner the mother was directly and indirectly handicapped as compared with the childless woman. Economically, parentage was placed at a great disadvantage in the battle of life. Such was the result of a class, the children of which are not economic assets, making the laws for a class in which children had from an early age had pecuniary value. It was possible that our legislators considered that no human law could interfere with the imperial instinct by which nature in the past has insured the maintenance of the race. In this they would probably have been right, but they did not realise that civilised man would separate the instinct from the parentage for the sake of which alone it had been evolved.

I do not wish you to take these statements on faith, but I would ask you to study what is happening in England from the accompanying diagrams. To my mind the whole of England wants studying in this way, and I hope that the Galton Laboratory will ultimately be able to issue a full treatment of this subject[1]. The results should be foundation knowledge for our science, but it needs still a twelve months' hard work. I have had to limit my inquiry in this lecture to a few districts, but the same method is being applied to every town and rural district in the country. I have confined my attention principally

[1 The first section of this treatment is now ready for press, 1912.]

to the north of England and to my native county, where I had some idea of the economic conditions. I owe to my colleague, Miss Amy Barrington, the extraction from Censuses and Annual Reports of the numbers of married women at each age, and the calculation of the births per married woman. If we take the married women between 15 and 55, we practically cover the whole reproductive periods —the births after 50 are few, but they certainly occur. Now, if we take the legitimate births, and average them over these married women, we get the children per married woman per year, or, what is the same thing, we get practically the number of years to the birth. For example, if there are only ten births to the 100 married women per year, it means that on an average the married woman has only one child per ten years of her reproductive period[1].

Now this method is satisfactory, if we are dealing only with one year, but it may lead us to fallacious conclusions if we leave out of account the change in a long period of the age distribution of our married women. The frequency of children born after the mother is 40 is less than the frequency before 40. Hence a great change in the age distribution might mark a great fall in this method of estimating the birthrate. I believe this to be largely the source of the fall in birthrate in our Colonies, for only the active younger women emigrated in the early days. Now that emigration is not the chief source of population, there are many more elderly women, and the birthrate has naturally fallen. In our own country this emigration factor is not markedly influential,

[1] This is assuming the expectation of a reproductive period of 30 years for the bulk of women on marriage.

but improved sanitation and greater care of women during lying-in have much increased the expectation of life, and we should accordingly expect to find some difference in the age distribution of married women; there is now a larger proportion of the older and less fertile women in our population. Does this at all sensibly influence our results?

I have endeavoured to answer this question by plotting the birthrates per married woman from 15 to 35 and from 15 to 55 separately for two districts, Bradford, a manufacturing town, and Cornwall, with its mixed population of agriculturists, miners and fishermen, but with an almost total absence of factories. Now, if you look at the diagrams (Plates I and II) you will see that the general slope of the two curves for the two groups of ages is substantially the same. It does not materially matter on which section you reckon the birthrate. There may be some slight effect due to age distribution, but the curve for all possibly reproductive wives is amply verified by the curve for young wives. The fall in the birthrate is not due—to any appreciable extent, that is likely to affect our argument—to an alteration in the age distribution of wives.

Now after these curves had been calculated I began without prejudice to try and study the dates at which this tremendous fall in the birthrate started. There is no possibility of denying the decline in these cases, but it is not so easy to determine just when and where it began. There seemed to me on examining the figures to be accelerating causes occurring about every ten years, and the years I marked taking each district independently were; slight effect in 1867, marked effect in 1877, very

marked effect in 1887 and accelerative effect in or about 1892. I did this without any bias as to those particular years and without having the factory legislation before me. Let us look at the districts in succession :

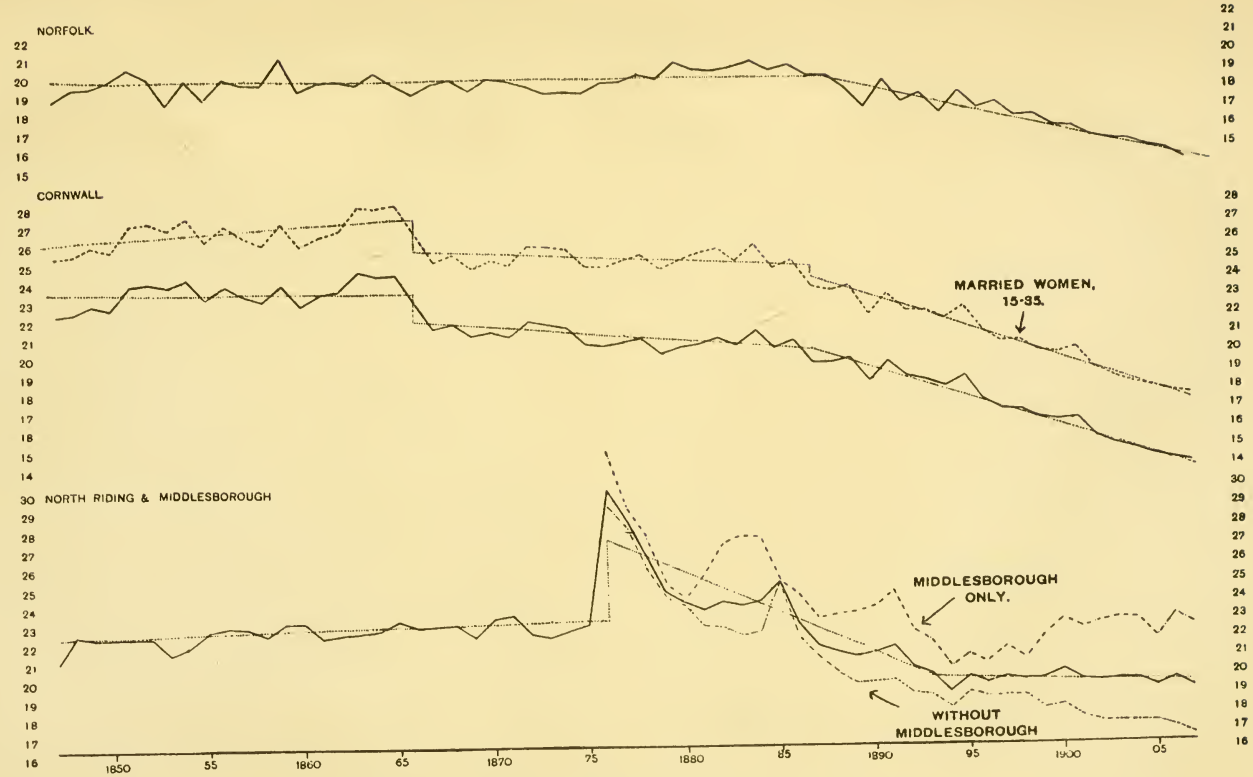
Rural Districts.

Cornwall (Plate I). Some effect in 1867—the birthrate drops after this below what it had been for 20 years. The decrease is not very marked, but it is there. In 1887 it takes a value lower than it had been for 40 years, and then drops rapidly, till we find each family having a child once in eight years. This must mean a drop from an average family of about six to one of less than four children.

Norfolk (Plate I). Another outlying district is Norfolk, practically solely agricultural. There is no sensible change in the birthrate until 1887 and then down it goes with a run, just as the population of wives, which had been stationary for nearly fifty years, begins to rise. Wives become more numerous, but mothers fewer.

North Riding of Yorkshire (Plate I). I can find no significant and certain change till about 1887 when the birthrate falls below 20, which it had not been for 40 years, since then it has declined but not nearly so markedly as in other cases. The average family may have dropped from six to five children[1].

[1] The diagram shows how the mushroom growth of Middlesborough has affected the birthrate of the North Riding. Like a new colony Middlesborough has drawn the younger married people, and without Middlesborough the North Riding birthrate has declined far more sensibly than appears if we include that town.



Birthrate for Married Women, 15-55.

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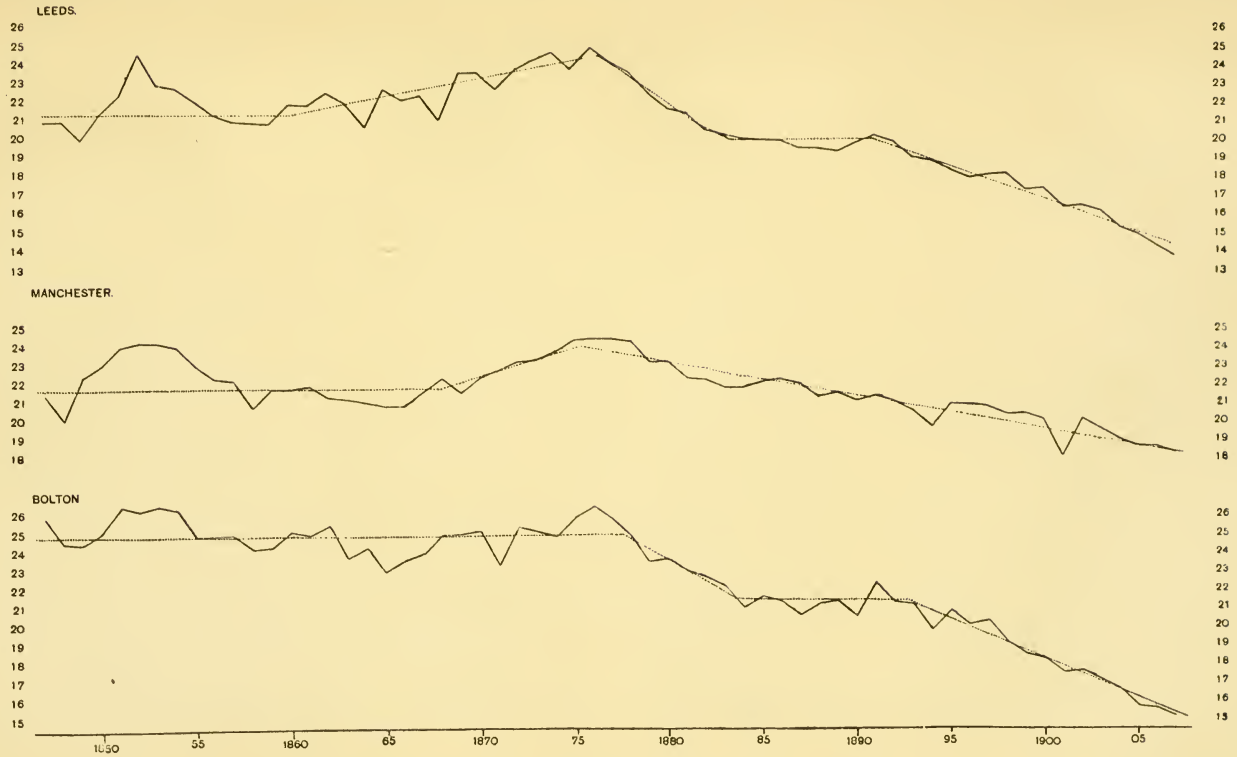


Birthrate for Married Women, 15-55.

Towns in which Manufacture is not wholly predominant.

York (Plate II). This is a good example of a town with no strong manufacturing interest, but county and trading occupations. I can find no sensible effect in 1867 or 1877, but in 1887 we begin our drop which is more or less continuous up to the present day; it involves a reduction in family from six to about four children.

Manchester (Plate III) is a great manufacturing town, but it has other trading interests, and is not so wholly devoted to textile work as Bradford or Bolton. There is no effect in 1867, it begins in 1877 feebly and is less marked from 1887 onwards. The whole reduction is only from about six to five births per family.

Purely Manufacturing Towns.

I take as a typical example of a purely manufacturing town:

Bradford (Plate II). It is a case where large numbers of women and children were employed in the woollen factories. I can find no real fall until 1877, after that we have an extraordinarily persistent and rapid fall. In 1852 the married women of Bradford had a child once in four years, now it is once in ten years. The number of births per family must have fallen from about seven to three. With the younger married women the birthrate has fallen from one in 2·4 years to one in four years. Assuming that infantile and child mortality destroys 30 p.c. of those born, the population of Bradford without immigration would at the present rate hardly be maintaining itself.

Huddersfield (Plate II). This is another woollen manufacturing town which may be profitably compared with Bradford. I find some trace of a fall in 1867, but it is feeble ; a marked change comes in 1877 and continues down to the present day, the births per family having decreased from something more than seven to less than three between 1851 and 1907, and being halved since 1877. Huddersfield has probably greater agricultural relations than Bradford.

Bolton (Plate III). I take this as a town more dependent on textile industries even than Manchester. We find no effect in 1867, the change began in 1877 and has been markedly accelerated since 1892. Bolton seems to stand midway between Manchester and Bradford.

Leeds (Plate III) is next to Manchester a great engineering as well as textile centre. I find no sensible effect in 1867, the birthrate is still on the rise. It begins to fall in 1877, more markedly than in Manchester and the acceleration is greatest from 1892 onwards. The reduction being one from about six to less than four births per family.

Now I think it impossible to study such curves as I have put before you and not appreciate the national gravity of the situation. The English population has not yet reached, but it is in a fair way to reach in the course of the next fifteen years, the condition of France in which it will not reproduce itself and will depend for maintenance on immigration.

To ascertain the source of these changes we have got to find some answer to the following questions :

(1) Did anything happen in 1867 to affect the

birthrate of some rural districts and some towns, e.g. Huddersfield?

(2) What happened in 1877 which affected both textile and engineering towns?

(3) What happened about 1887 which produced a marked effect not only on engineering towns, but on certain non-urban districts and trading towns?

Now from 1864 to 1867 we have a series of factory acts, which applied to bleaching and dyeing works, to copper, steel and iron industries, and culminated in the Workshop Regulation Act of 1867. By this act no child under eight was to be employed in any handicraft, children from 8 to 13 only to be employed half-time. I believe this to be actually the most important step taken up to that date to destroy the economic value of the child.

In 1878 we find another important act applying especially to textile factories, the only act between 1867 and 1878 being one of 1874 which raised the minimum age to ten. This act of 1878 was extremely complex and calculated on this very ground to discourage the employment of children. Children defined to be persons under 14 were to be employed for half-time only—in morning or afternoon sets or on alternate days. A child must not be employed for two successive periods of seven days in the same set, whether morning or afternoon, nor on two successive Saturdays, nor on Saturday in any week, if he has already in that week been employed on one day more than five and a half hours. Nor shall a child be employed fully on two successive days, nor on the same day in two successive weeks. Employment of the children at home when the work is the same as

in factory or workshop was also regulated. No child under ten was to be employed, and medical certificates were required in the case of all children and young persons under 16.

It will be seen at once that this act threw a great responsibility on the employer of child labour and most effectively tended to destroy the child as an "economic asset." Children under ten could not be employed at all, children under 14 could only be employed half-time and this in a complicated way. All persons under 16 required a medical certificate.

In 1887 we have the *Mines Act*, which referred not only to coal, iron, etc., worked underground, but to shale and fire-clay and to works above ground where minerals were prepared for use. It prohibited the employment of boys underground under 12, and of both boys and girls above ground in any work of the above character under 12 years. Boys below ground must not work more than 54 hours in any one week, nor more than ten in any one day from surface to surface. Boys or girls between 12 and 13, not more than six days in any one week, and the daily total must then not exceed six hours.

Protected persons above 13 are limited to the same daily and weekly total as boys below ground. This act directly touched interests in Cornwall and North Yorkshire.

In 1891 the age of employment of children was raised again, and the employment of women immediately after childbirth restricted. In 1899 the Education Act made it unlawful to employ any child under 12 in such a manner as to prevent full attendance at school, and in 1901 the prohibition of the

employment of any child under 12 in factory or workshop was made direct and absolute.

Thus finally we see that a child is practically non-productive under 12, of limited productivity under 16 and that there are restrictions on the employment of child-bearing women. These factory acts must be taken in conjunction with the Education Acts, that of 1870 instituting the board-schools, that of 1876 making attendance of children compulsory, and that of 1880, whereby (i) children must pass a certain standard before they could go to work and (ii) school authorities were instituted to enforce attendance.

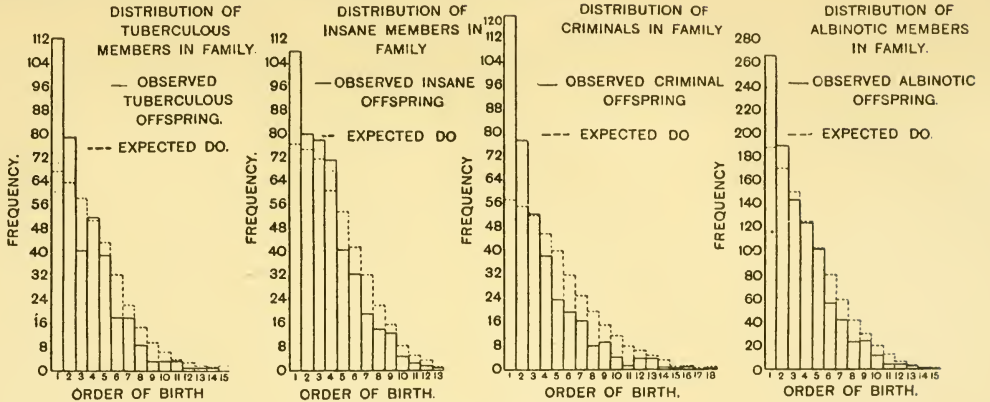
The Workshop Regulation Act of 1867, the Education Act of 1876, and the Factories and Workshops Act of 1878, the Mines Act of 1887 and the 1891 Act as to women and children, mark the special stages in increased restriction of the employment of children, and correspond to the steps of accelerated decadence in our birthrate curves. The child has ceased to be an economic asset till it is 13 to 14 years of age and its value after that age has been much reduced. But this increased burden of parentage for the mass of the population would not have led at once to its full consequences had not the trial of Mr Bradlaugh and Mrs Besant in 1877 resulted in a widely spread knowledge of the possibility of differentiating marriage and parentage[1]. Thus the accelerative effect of the Acts of 1876—1878, 1880, 1887, and 1891 is far greater than the very fundamental Act of 1867.

If, as I believe, our present precarious condition

[1] My own observations would point to the decade 1885 to 1895 as the period when systematic neomalthusian propagandism was first started in the *rural* districts.

with regard to the birthrate is a direct effect of the destruction by legislation of the economic value of the child, surely a great lesson may be drawn for practical eugenics? Does it not demonstrate that whatever law affects the economic status of a portion of a community, must also be dealt with from its biological aspects? And in this case the biological aspects are far more subtle than even a halving of the birthrate. Before we consider the practical bearing of this reduction in the economic value of the child, I should like to point out to you some further biological results of our reduced birthrate. If our observations are correct, and I believe them to be so[1], then the mental and physical condition of the first and

[1] If I were to endeavour to reply to the plentiful crop of undiscerning critics, who have attacked this as many other points of our work, I should have no time or energy left to carry on additional research. The nature of the argument used in my conclusions as to the incidence of pathological defect on the earlier born is very simple. There is first a demonstration that the distribution of size of families in the pathological stocks does not differ sensibly from that of the community in general; there is next the observation that the distribution of pathological members is not that of a chance distribution within such stocks. The problem can be attacked in other ways. We may ask, for example, omitting families of one, if in families of two, the marked individual is as frequently second as first born, if in families of three he is as frequently second and third as first born and so on. For example in the case of albinism, we have on this plan 184 firstborn albinos as against 158 expected. The odds are 90 to 1 against such a deviation on the ground of random selection. I have simply stated the statistical result, it does not affect my conclusion to be told that it is because the earlier children are born from too young parents; it may be so, or it may not. There is a counterbalancing evil arising from being born of too old parents. Further the primiparous woman may experience greater stress from the physical changes which precede childbirth—and these may react on the unborn child—than occurs at a second or later birth. And while this stress may diminish with some increase of age, it probably increases rapidly again after the prime of life. At present my point is the statistical fact, we shall learn in good time its cause.


DISTRIBUTION OF TUBERCULOUS MEMBERS IN FAMILY.
— OBSERVED TUBERCULOUS OFFSPRING.
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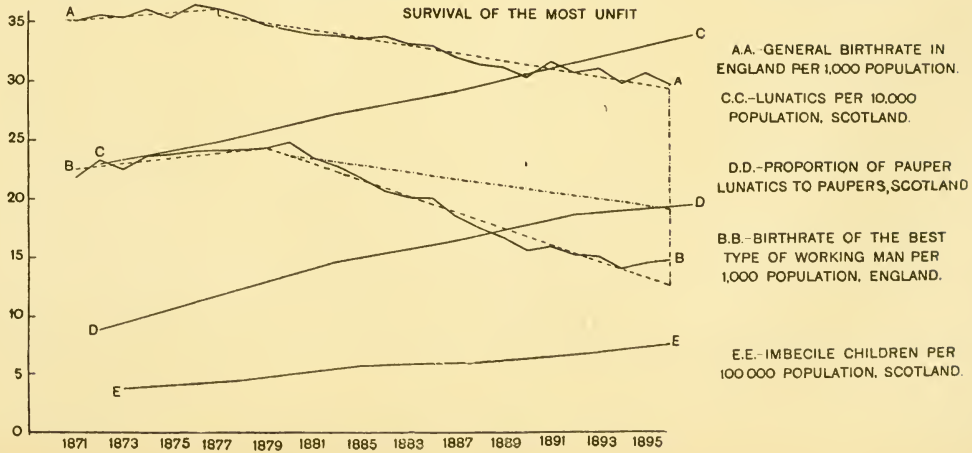
SURVIVAL OF THE MOST UNFIT
A
B
C
D
E
1871 1873 1875 1877 1879 1881 1885 1883 1887 1889 1891 1893 1895
A.A.-GENERAL BIRTHRATE IN ENGLAND PER 1,000 POPULATION.
C.C.-LUNATICS PER 10,000 POPULATION, SCOTLAND.
D.D.-PROPORTION OF PAUPER LUNATICS TO PAUPERS, SCOTLAND
B.B.-BIRTHRATE OF THE BEST TYPE OF WORKING MAN PER 1,000 POPULATION, ENGLAND.
E.E.-IMBECILE CHILDREN PER 100 000 POPULATION, SCOTLAND.

second born members of a family is differentiated from that of later members. They are of a more nervous and less stable constitution. We find that the neurotic, the insane, the tuberculous, and the albinotic, are more frequent among the elder-born. Dr Goring's results for criminality show the same law. The diagram (see Plate IV) I put before you will bring this out; you see in the tuberculous, the insane and criminal stocks that the first few members are weighted.

But the result of this law is remarkable. It means that if you reduce the size of the family you will tend to decrease the relative proportion of the mentally and physically sound in the community. You will not upset this conclusion in the least, if, as I suspect, the extraordinarily able man, the genius, is also among the early-born. For you will not lose him, if you have a larger family, although you will lose the sounder members if you curtail it.

Now it seems to me that we have an illustration in this matter of a case—and it is not an isolated case—in which legislation intended to promote national progress—to improve the racial qualities of future generations—has directly tended to enfeeble the race; in the first place by reducing the intensity of natural selection, and in the second place by producing a population of lower average fitness. I attribute this result to the fact that one class which had no experience of the child as an economic asset was legislating for another whose life-conditions the former class did not in the least realise. Parentage and motherhood were placed at a grave economic disadvantage in the battle of life,—relatively to

childlessness and to the wifehood, which was not motherhood.

Do I advocate then the repeal of the factory acts, the return of the infant to the reeking workshop and the swelter of the factory; the readmission of the mother near the birth of her child to the grinding toil of tending the loom or to the stifling atmosphere of the wool dressing or combing rooms?

Assuredly not. I wish, however, to emphasise two practical points. The first is, that legislation intended to increase racial fitness may end by penalising parentage and motherhood. The second is, that the economic value of the child will in the long run govern its production. All legislation which places parents in an economically worse position than the unmarried is radically unsound. An act which to protect the unborn child places the mother in a worse position economically than the single woman should seem to us the height of cruelty, yet we have carried such an act in our intensity of pity for the ricketty, ill-developed child. A law which leaves the wages of the parent relatively the same as those of the single man, and allows him to see the food rations lessen with each new mouth, must clearly ultimately defeat its own purpose—the increased welfare of the child. But if it be necessary to assert that the factory acts have had a cacogenic effect, I believe they have taught us one fundamental truth round which all practical eugenics in our artificial civilisation must turn.

The child is economically a commodity and like any other ware is produced to meet the demand; for the great bulk of the population whose wages extend but little beyond subsistence, the child will

be produced or not according as it has economic value. If we can give the child economic value, the birthrate will rise; if we can differentiate between the economic values of good and bad parentage, if we can make the possession of healthy, sound children a greater economic asset than the possession of feeble offspring, then we have for the mass of the people solved the problem of practical eugenics.

I am very fully aware that this fundamental principle—that the child is a ware and, in a community which has learnt how to restrict its birthrate, will be produced in proportion to its economic value,—will not be a popular doctrine. Above all it will not appeal to the sentiments and imagination of the cultured classes. With those classes the child has never been an economic asset; it is a luxury which we know we must pay for, and expect to pay for, until after college and professional training, and, in the case of unmarried daughters, often until long after our own lives are concluded. But the fault of the cultured classes is that they too often extend their own feelings and sentiments to far larger classes of the community where different economic conditions render them absolutely inappropriate. The pleasures of parentage which involve no reduction in the necessaries of life, or only the curtailment of minor luxuries, are not comparable with such pleasures tempered by serious inroads on the available means of adequate subsistence, even on the food supply. We can appeal to the cultured classes to regard national welfare in the quantity and quality of their offspring. We can, in the case of these cultured classes, urge great social principles, and

ultimately create social sanctions, for the parentage of the fitter and the sterility of the unfitter stocks. This is a moral crusade, and I believe it will be successful, however many are the prejudices and difficulties it will have to encounter.

But such a movement, however valuable in itself—and I do not underrate its value because I believe the cultured classes have the selection of generations behind them—is wholly inadequate for it will not reach the great mass of our population. Practical eugenics is after all concerned with two fundamental problems :

(i) The production of a sufficient supply of leaders of ability and energy for the community, and

(ii) The provision of intelligent and healthy men and women for the great army of workers.

If the great army of workers be maintained more or less at a subsistence wage, then the second fundamental problem of practical eugenics is not a question of moral teaching to be backed by a social sanction—those methods can apply only to our first fundamental problem. It is a question of economic value and of legislative sanction.

I have endeavoured to show you to-day that in the mass of the community the child is a ware, and its production is singularly sensitive to any legislative action which alters its economic value. There is, I believe, one way, and one way only, of solving this problem : we must reverse the effect of the factory acts which have penalised parentage and handicapped motherhood. But the reversal must be done in a differential manner, sound parentage and healthy motherhood must be given a substantial economic

advantage over, not only childlessness, but over unsound parentage and feeble motherhood; the well-born child must again be made a valuable economic asset. This is the central problem of all practical eugenics,—eugenics as a doctrine of national welfare is a branch of national economy.

As far as I am aware all forms of employment, individual, municipal and governmental service in this country, directly penalise parentage and motherhood. The single exception to the rule that I know of anywhere is in the pensions of the Indian Civil Service, which provide directly for the widow and for the education of each individual child to the age of 21, but thus far without any regard to the probable quality of the stock. Our eugenic object must be to regard the quality of the stock in at least a rough and ready way when we endeavour legislatively to reverse the effect of the factory acts. Before touching possible directions of reform, I want to point out to you that while all penalisation of parentage is bad,—for, given the material, Nature, the first and most thorough practical eugenist, will play her part in selection—yet our special penalisation is excessively bad; for it has, owing to municipal and charitable institutions, emphasised the penalty in the case of the better type of parent.

The thrifty, provident parents who wish to provide a home life for their offspring not only find themselves penalised as against their childless competitors, but as against the thriftless and improvident who throw the burden of their children on public rates and on private charities. I want to bring this out emphatically because it seems to me an essential

TABLE I. *Fertility in Pathological and Normal Stocks*[1].

PATHOLOGICAL.

Class	Authority	Nature of marriage	Size of Family
Deaf mutes, England ...	Schuster	Probably completed	6·2
Deaf mutes, America ...	„	„ „	6·1
Tuberculous stock	Pearson	„ „	5·7
Albinotic stock	„	„ „	5·9
Insane stock	Heron	„ „	6·0
Edinburgh degenerates ...	Eugenics Lab.	Incomplete	6·1
London mentally defective...	„	„	7·0
Manchester „ „ ...	„	„	6·3
Criminals	Goring	„	6·6
		Mean	6·2

NORMAL.

Class	Authority	Nature of marriage	Size of Family
English middle class[2] ...	Pearson	15 yrs. at least *begun before* 35	6·4
Family Records	„	Completed	5·3
English intellectual class ...	„	„	4·7
Working class, N.S.W. ...	Powys	„	5·3
Danish professional class...	Westergaard	15 years at least	5·2
Danish working class ...	„	25 years at least	5·3
Edinburgh normal artizan...	Eugenics Lab.	Incomplete	5·9
London normal artizan ...	„	„	5·1
English intellectuals ...	S. Webb	Said to be complete	1·5
American graduates ...	Harvard	Complete	2·0
		Mean, omitting last two	5·5

[1] Pearson, *The Scope and Importance to the State of the Science of National Eugenics*. Dulau and Co., Soho Square.

[2] The bulk of these families antedate the neo-malthusian movement.

part of practical eugenic policy to protest and fight against this municipal and charitable method of penalising better parentage. I would first draw your attention to the diagram (Plate IV) which marks the percentage of applications of Foresters to the funds of their society for the lying-in of their wives. This society undoubtedly contains a selected body of working-men. You will mark the extraordinary drop that has taken place in the birthrate of this better type of the working classes since 1878; the drop is far greater than in the general community. We have seen from our diagrams of the great manufacturing towns of the north of England that the average size of the family has fallen from about six to seven to three to four children. I now draw your attention to recent statistics of the average size of families in degenerate and pathological stocks (Table I). You will see that the old rate has been maintained in these stocks; and not a little of this is due to the fact that members of these stocks are largely provided for at public expense.

Dr Heron has worked at the districts of London and correlated the birthrate calculated on wives of reproductive age with a large number of good and bad characters. He finds (Table II) in every case a very marked relation between a high birthrate and the bad characteristic, the one exception being cancer. The districts of good social character with their low birthrate have the most cancer.

TABLE II. *David Heron*[1]. *Correlation of Birthrate with undesirable Social Factors. Birthrate calculated on Wives of Reproductive Ages.*

Characters correlated with birthrates	Correlation
Proportion of occupied males engaged in professions ...	−·78
Number of domestic servants per 100 females	−·80
Number of domestic servants per 100 families	−·76
General labourers per 1000 males	+·52
Pawnbrokers and general dealers per 1000 males ...	+·62
Proportion of children aged 10—14 employed	+·66
Proportion of persons living more than 2 in a room ...	+·70
Number of infants under 1 year dying per 1000 births...	+·50
Deaths from phthisis per 100,000...	+·59
Number of all classes of paupers per 1000	+·20
Number of lunatic paupers per 1000	+·34
Infantile mortality and children 2—4 per 100 wives ...	+·59
Infantile mortality and children 5—14 per 100 wives ...	+·54
Infantile mortality and children 13—15 per 100 wives...	+·39

The table shows in every case (cancer is the only exception we know) a *positive* correlation between an undesirable social feature and a high birthrate, and a *negative* correlation between a mark of a well-to-do population and the birthrate. The last three correlations prove that a high infantile mortality—the mark of low social status—is notwithstanding associated with more *surviving* children.

Further this significant relationship between undesirable characteristics and a high birthrate has developed during the last 50 years.

[1] On the Relation of Fertility in Man to Social Status. *Drapers' Research Memoirs.* Dulau and Co., Soho Square.

TABLE III. *David Heron's*[1] *results showing change in correlation between birthrate and undesirable characters between* 1851 *and* 1901.

Character correlated with birthrate	Correlation Coefficients	
	1851	1901
No. of female domestic servants per 100 females ...	−·63	−·80
No. of professional men per 1000 males	−·53	−·78
No. of general labourers per 1000 males	+·12	+·52
No. of pawnbrokers and general dealers per 1000 males	+·21	+·63
Mean arithmetical value	·37	·68
No. of children dying under 1 year per 1000 births ...	−·30	+·51

Table III shows the great increase, the almost doubling in the magnitude, of these correlations in 50 years. But the change is still more noteworthy if we allow for the change in the mean age of the wives in each district, i.e. if we correlate for a constant mean age of wife.

TABLE IV.

CORRELATIONS ALLOWING FOR MEAN AGE OF WIVES.

Character correlated with birthrate	Partial Correlation	
	1851	1901
No. of female domestic servants per 100 females ...	+·16	−·38
No. of professional men per 1000 males	+·35	−·40
No. of general labourers per 1000 males	−·53	+·28
No. of pawnbrokers, etc., per 1000 males	−·54	+·34

[1] On the Relation of Fertility in Man to Social Status. *Drapers' Research Memoirs.* Dulau and Co., Soho Square.

We see from Table IV that in 1851 the whole effect was due to the difference in mean ages of wives in the different districts. What correlation existed, after allowing for this, was in favour of higher birthrate and better status. Correcting for higher mean age of wives in the districts of better status, we now find the higher birthrate associated with lower social status. The lower age of marriage no longer accounts for the differential fertility.

The investigations of Heron require extension to the whole of the United Kingdom. But I have very little hope that any essential correction of them will follow further study. All separate lines of inquiry tend to confirm the view that the districts of a good social character have the lower birthrates; that the anti-social stocks are at present most prolific, and this whether we measure the gross or net fertility. Now the last half century in our history has been one of which the central historical feature has been the attempt by legislation to improve the condition of the people. And what will be the final judgment of history on this great movement? It will have to record that the social evolution of the last 50 years has produced the following effects:

(i) A markedly lower birthrate.

(ii) A correlation of the higher grades of this lower birthrate with socially undesirable characters.

There has been not only a penalisation of parentage, but a penalisation of the better parentage in a more marked degree. The child, ceasing to be an economic asset, has become a burden, but poor law and charity have largely succeeded in lifting this

burden from the shoulders of the *degenerate* parents. We have not only hindered Nature from weeding out social wastage, but we have made the conditions increasingly more favourable to the multiplication of this degeneracy. Practical eugenists must urgently demand the reversal of all legislation which penalises the parentage of the fit, and the restriction of all charity which favours the parentage of the unfit. We must directly or indirectly produce differential wages for the fit parent; in other words there must be endowment of fit parentage at the expense of the unfit parent and of childless men or women.

Does the endowment of fit parentage on the part of the state appear to you a perfectly idle dream? There are many ways in which it can be indirectly reached, even under existing social institutions. Among these I would note differential taxation, and the better appropriation of charitable, especially educational, foundations. Of course the recent differential income tax regulation of Mr Lloyd George is idle if we judge it either from the standpoint of penalisation or of eugenics—it is ineffective as removing any substantial burden from parentage, and it does not emphasise fitter parentage. Still further it touches only a most limited class. But it is all important as the first admission of the vital principle that the child must be given again an economic value.

It will be the fault of eugenic workers if the thin end of the wedge thus inserted be not driven home. Taxation must differentiate between the parent and the non-parent in income-tax, settled estate duty and death duties. The main difficulty—once the injustice

of penalising parentage is admitted—lies in the fact that all direct taxes fail to touch the great bulk of the people with whom we are here, in the first place, concerned. There is no obvious means by which direct taxes can be used to equalise the burdens of the parent and the childless ; they fall in all cases with greater weight on the larger number, even if the group has to be supported from the same wages.

The state by hasty vote-catching legislation with regard to old age pensions has just lost a splendid opportunity for eugenic reform. The time when the workman really wants most aid is when his children are young and are wholly dependent upon him. If his offspring have been sound in body and mind his dependence upon them in old age is not in itself so wholly unreasonable. In a society where children are few and many of those few degenerate, the care of the aged becomes no doubt an urgent problem. Such genuine demand as there has been for old age pensions is not a little based on the declining birthrate and the increasing incapacity of many who are born. Had we adopted a general system of insurance similar to that of Germany in its origin, i.e. state, employers, and workmen themselves contributing—but different in its application—namely insurance against invalidity, with provision, as with the Foresters, for motherhood, and, as in the Indian Civil Service, for each child, we could at once have reversed the evil effects of the factory acts as far as these penalise parentage and handicap motherhood. It needs but a stage further, the differentiation of the provision for children and motherhood according to the fitness of parentage,

and we have a complete eugenic social scheme. At first a very rough standard of differentiation would suffice—a fairly clean bill of health for both parents, an absence of obvious taint in their immediate stock, a moderate school standard passed, and a minimum wage value in the market to test general ability. Even without this slight test—which at any rate would exclude the epileptic, the deformed, the insane, and the deaf-mute stocks from the benefits of the scheme—we should by a simple insurance fund of this kind have removed the present disabilities of parentage which, as I have endeavoured to show, are practically differential with regard to the fitter parents.

When we regard the present six or seven million pounds a year—soon to be ten or more millions—given to a mere environmental reform, which applied long after the reproductive age cannot possibly produce any *permanent racial* change, how deeply one must regret the want of knowledge and of statesmanship, which overlooked the naturally disastrous policy of the factory acts, and did not seek its opportunity to endow parentage rather than senility with those annual millions! Even as a party cry I believe the endowment of parentage would have been effective; as a step to meet grave racial dangers it would have possessed real insight.

So much then for the legislative element in eugenic reform. When we turn to the field of charitable and social enterprise we see at once the very large amount of work that can immediately be done in educating public opinion in a right direction. We see enormous sums annually given for charitable

purposes without the least attempt to differentiate between the recipients who spring from fit and those who spring from unfit parentages, between the recipients who are of racial value and those who are mere social wastage. Asylums abound for the imbecile and the cripple, homes for waifs and strays; orphanages and hospitals exist the boast of which is that they receive without selection all sufferers. Do the subscribers to these and many other kindred institutions ever consider that they are directly penalising fit parentage by enabling the unfit parent to obtain provision for his deformed or diseased offspring? Is it not within the experience of many of us that the relatives, who wish to get a child into an orphanage, are more likely to bring him to the head of the poll, if they can say that his father died of phthisis, that his mother is delicate and unable to work, and that he is one of eight children five of whom are totally unprovided for, the three others, being two in an epileptic home, and the third an imbecile? Is it not possible by aid of a little educative propagandism of a eugenic character to divert some of the thousands we see every week willed to indiscriminate charity into a more rational and national channel? Why should they not be ear-marked in even some small percentage of cases for the offspring of fit parentage? Cecil Rhodes with the insight of a strong man determined that the Rhodes scholars should be selected for ability, physique and character combined. Such a combination will rarely be found without fit parentage, and probably the best means of securing it would be a study of ancestry. Why should we not directly

endow fit parentage by extending the conditions of admittance to new, and ultimately to ancient educational foundations, beyond success in mere written tests, to excellence in physique and character? I take it that the abolition of the purely competitive examination test for the navy is an attempt in this direction, and that if it can be preserved from that most deadly and infectious of all executive diseases, nepotism, it will prove in another if small class a direct encouragement to fit parentage. The whole system of secondary school and university scholarships provided by the educational committees of the County Councils wants at present stable basis. The candidates too often lack the physique and character, without which mere examination ability is worthless. Here again is a wide field for eugenic effort, for the indirect endowment of the fitter parentage. In this and many other social directions the eugenist may see, and I hope will seize, the opportunity for inculcating truer views than are current of social conduct. His chief foes will ever be the indiscriminate charity, which flows out towards the sight of suffering without regard to ulterior consequences, and the obvious disadvantage that every eugenic reform must take at least a generation to show its virtues. He has to fight the borough councillor who wants to show to his townsfolk a profit immediately attained, and the politician who has no eye beyond the next general election.

Yet the student of eugenics, by preaching in and out of season the principles that make for racial fitness, will ultimately educate that subtle entity public opinion, which in the end reacts even on

borough councillor and politician. I am very fully conscious that there are many other directions than those I have advocated to-day wherein the eugenist can work towards racial improvement. But I have chosen the two points—factory legislation and modern charity—because I believe they are the sources of our gravest present difficulties. Both of them mark the extreme limit of philanthropic effort—the attempt to improve the racial fitness of the nation by purely *environmental* reforms, the removal of child and mother from unhealthy surroundings, and the provision for the weak and the suffering. Both have failed in promoting racial efficiency, because they overlooked great all-mastering biological laws. After 60 years of philanthropic effort unparalleled in any European country, we find ourselves as a race confronted with race suicide; we watch with concern the loss of our former racial stability and national stamina.

And the source of this is simple, we have placed our money on Environment, when Heredity wins in a canter. No breeder would believe that by improved stables, feeding, exercise and training, he could, neglecting selection of ancestry and fit parentage, obtain a stud productive of Derby winners. Yet a like belief has been practically the basis of the policy of our statesmen and social reformers.

They first penalised parentage—forgetting that to the masses the child is a commodity produced according to its economic value—and the result is that in fifty years they have almost halved the national birthrate, thus cutting off from Dame

Nature much of her selective power; they overlooked the fact that the smaller the family the greater is the chance of degeneracy for we are limited to the less efficient elder born. By the foundation of innumerable charities and municipal institutions they further penalised the fitter parent, who had to support his own fit offspring, as against the unfit parent who passed his degenerate offspring into asylums and homes. The fertility at a given age which in 1851 was greater for the districts with desirable characteristics, became in 1907 markedly greater in the districts associated with undesirable characteristics. An artificial birthrate has been created in the fitter classes, which may become habitual, and if so spells ultimate racial destruction.

Practical eugenics demand in the first place that the economic value of the child shall be restored, that parentage shall no longer be penalised; and in the second place the reversal of the present system by which the fit parent is handicapped as against the unfit. If both are in the same trade they receive the same wages, but the one is burdened by, the other relieved of, his offspring. The essential principle should be to handicap the unfit parent, not to relieve him of his encumbrances. The differential endowment of fit parentage relatively to unfit parentage and to childlessness, is the fundamental demand of the eugenist. Personally, I do not yet see light towards its practical solution, except in a system of national insurance, in which employer, state and workman shall combine to insure against invalidity, motherhood and the nurture of offspring—such provision being differentiated by

the fitness of the parentage. Meanwhile, we have spent the millions at present available, millions which might have produced lasting influence on the race, in the fleeting good of an environmental effect; it is the old story repeated in the most recent evil by which unthinking philanthropy has crippled our power of modifying race fitness. The last inducement to fit parentage, the support in old age of a sturdy offspring, is removed by the state support alike of the fit and the unfit parent.

The view of human society which has been given in this lecture, will I fear prove unpopular—that is not in my mind an argument against its truth. I would not ask you to accept it without much criticism, and without viewing it from every possible side. To some of you who do this it will become a real possession, which will unify your conceptions of our present difficulties as to the apparent incompatibility of the highest forms of civilisation with continuous race progress. Why do we find degeneracy and race suicide arise as human sympathies and emotions are widened? I think the answer lies in the fact that environment appeals directly to our senses, but the indefinitely more potent heredity only to our reasoning. We rush to modify the former, regardless of the laws of the latter. The relief of pain and suffering is so obvious a duty, the penalisation of parentage is so disguised and so distant in its effects. When we say: "You must protect the child from unhealthy or cruel environment," the best of the nation is with us with vote and even with purse. When we say: "You must preserve the economic value of the child," we evoke no sympathy;

none see at once the whole tale of penalised parentage, lowered birthrate, cacogenic reproduction, race degeneracy and the ultimate race suicide involved in the breach of that principle. Yet of the two statements I do not hesitate to say that the latter is far more fundamental; it is the search-light, which illumines the inmost recesses of history, and explains the fall of great world-civilisations. For those, who are desirous of judging legislation and social habit from the standpoint of practical eugenics, I feel certain that the fundamental questions are: (i) Do they preserve or create economic value for the child, and (ii) Do they emphasise the economic value of the child of fit parentage over that of unfit parentage? The first affirmed insures that the bulk of men will have children at all; the second affirmed that those children will be progressively better born.

The child as a commodity whose supply is regulated by economic value may sound a harsh doctrine. But truth—whether of natural selection or of social evolution—is not created by man; he has only to discover it, be it palatable or bitter. Social stability depends upon the extent to which we allow even unpalatable truth to guide our legislation and our conduct. Eugenists have before them at present alternative paths, they can follow the easy course of appeal to popular feeling and untutored human emotion, in which case they will create, like philanthropic effort, immediate interest, have their day and their fashion, and leave no progressive impress on racial evolution. Or, they can take the harder road of first ascertaining the laws which regulate the human herd, of creating a science which shall

dictate an ultimate eugenic art. In the latter case they will scarcely be popular for I feel sure their truths will be bitter, and our generation likes above all things its medicine in a mild and toothsome form.

> "but here's the plague
> That all this trouble comes of telling truth,
> Which truth, by when it reaches him, looks false,
> Seems to be just the thing it would supplant."

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